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EXAMINER	
SINGH, SATWANT K	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/647,271	KAWATOKO ET AL.	
	Examiner	Art Unit	
	SATWANT K. SINGH	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 12-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 12-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 02 April 2008 has been entered.

Response to Arguments

2. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3, 8-10, 12, 13, and 16 are rejected under 35 U.S.C. 102(e) as being anticipate by Walker et al. (US 6,707,572).

5. Regarding Claim 1, Walker et al discloses an image printing method for completing a print process of a pixel by making a plurality of scans of a print head (pixel

maps transferred to the printed page are typically arranged in a plurality of scan lines) (col. 4, lines 24-32), which prints dots on a print medium (Fig. 2), with respect to the print medium, comprising the steps of: selecting specification information for specifying one or more scans used to print one or more dots having a single size (Figs. 2 and 4, both show all of the dots being the same size) on the pixel on the basis of a density level of the pixel (if the pixel map is a bit map having binary digits of “1” corresponding to solid-colored pixels and binary digits of “0” corresponding to blank pixels) (col. 6, lines 46-56); assigning the selected specification information to the pixel (“1” corresponding to solid colored pixels and "0" corresponding to blank pixels) (col. 6, lines 46-56); and printing the one or more dots on the pixel in the one or more scans specified by the assigned pattern specification information (solid colored pixel in the printed image or a blank or clear pixel in the printed image) (col. 5, lines 13-20), wherein when the density level of the pixel is higher than a predetermined density level, the specification information specifying a combination of the scans used to print the dots is selected (Fig. 5, block 90) (total weight is greater or equal to the threshold value) (col. 7, lines 9-67).

6. Regarding Claim 2, Walker et al discloses an image printing method for completing a print process of each a pixel by making a plurality of scans of a print head (pixel maps transferred to the printed page are typically arranged in a plurality of scan lines) (col. 4, lines 24-32), which prints dots on a print medium (Fig. 2), with respect to the print medium, comprising the steps of: assigning, to the pixel, specification information which specifies the number of one or more dots having a single size corresponding to a density level of the pixel and one or more scans used to print the

one or more dots having a single size (if the pixel map is a bit map having binary digits of "1" corresponding to solid-colored pixels and binary digits of "0" corresponding to blank pixels) (col. 6, lines 46-56); and printing the one or more dots to the pixel in the one or more scans specified by the assigned specification information (solid colored pixel in the printed image or a blank or clear pixel in the printed image) (col. 5, lines 13-20), wherein when the density level of the pixel is higher than a predetermined density level, the specification information specifying different scans used to print the dots is assigned to the pixel in the assigning step (Fig. 5, block 90) (total weight is greater or equal to the threshold value) (col. 7, lines 9-67).

7. Regarding Claim 3, Walker et al discloses an image printing method for completing a print process of a pixel by making a plurality of scans of a print head (pixel maps transferred to the printed page are typically arranged in a plurality of scan lines) (col. 4, lines 24-32), which prints dots on a print medium (Fig. 2), with respect to the print medium, comprising the steps of: assigning to the pixel specification information used to specify which of the plurality of scans is used to print one dot or each of dots having a single size to be printed for the pixel on the basis of a density level of the pixel; generating a print data corresponding to one or more dots to be printed in each scan of the print head on the basis of the pattern specification information assigned to the pixel (if the pixel map is a bit map having binary digits of "1" corresponding to solid-colored pixels and binary digits of "0" corresponding to blank pixels) (col. 6, lines 46-56); and printing one or more dots to the pixel on the basis of the generated print data wherein when the density level of the pixel is a predetermined density level, in the assigning step

(Fig. 5, block 90) (total weight is greater or equal to the threshold value) (col. 7, lines 9-67), one set of specification information is selected from a plurality of sets of specification information specifying different combinations (“1” corresponding to solid colored pixels and "0" corresponding to blank pixels) (col. 6, lines 46-56), respectively, as a combination of the scans used to print the predetermined number of dots (solid colored pixel in the printed image or a blank or clear pixel in the printed image) (col. 5, lines 13-20), and the selected specification information is assigned to the pixel (Fig. 5, block 92, reset the present pixel element to a null valued pixel) (col. 7, lines 9-67).

8. Regarding Claim 8, Walker et al discloses a print data generating method that generates a print data for completing a print process of a pixel by making a plurality of scans of a print head (pixel maps transferred to the printed page are typically arranged in a plurality of scan lines) (col. 4, lines 24-32), which prints dots on a print medium (Fig. 2), with respect to the print medium, comprising the steps of: selecting specification information for specifying one or more scans used to print one or more dots having a single size (Figs. 2 and 4, both show all of the dots being the same size) on the pixel on the basis of a density level of the pixel (if the pixel map is a bit map having binary digits of “1” corresponding to solid-colored pixels and binary digits of “0” corresponding to blank pixels) (col. 6, lines 46-56); assigning the selected specification information to the pixel (“1” corresponding to solid colored pixels and "0" corresponding to blank pixels) (col. 6, lines 46-56); and generating the print data corresponding to the one or more dots to be printed in each scan of the print head on the basis of the specification information assigned to the pixel (solid colored pixel in the printed image or a blank or

clear pixel in the printed image) (col. 5, lines 13-20) wherein when the density level of the pixel is higher than a predetermined density level, the specification information specifying a combination of the scans used to print the dots is selected (Fig. 5, block 90) (total weight is greater or equal to the threshold value) (col. 7, lines 9-67).

9. Regarding Claim 9, Walker et al discloses a print data generating method that generates a print data for completing a print process of a pixel by making a plurality of scans of a print head (pixel maps transferred to the printed page are typically arranged in a plurality of scan lines) (col. 4, lines 24-32), which prints dots on a print medium (Fig. 2), with respect to the print medium, comprising the steps of: assigning to the pixel specification information used to determine which of the plurality of scans is used to print one dot or each of dots having a single size (Figs. 2 and 4, both show all of the dots being the same size) to be printed for the pixel on the basis of a density level of the pixel (if the pixel map is a bit map having binary digits of "1" corresponding to solid-colored pixels and binary digits of "0" corresponding to blank pixels) (col. 6, lines 46-56); and generating the print data corresponding to the one or more dots to be printed in each scan of the print head on the basis of the specification information assigned to the wherein when the density level of the pixel is a predetermined density level ("1" corresponding to solid-colored pixels "0" corresponding to blank pixels) (col. 6, lines 46-56), in the assigning step, one set of specification information is selected from a plurality of sets of specification information specifying different combinations (processing a particular pixel element P in the pixel map) (col. 6, lines 57-67, col. 7, lines 1-8), respectively, as a combination of the scans used to print the predetermined number of

dots, and the selected specification information is assigned to the pixel (solid colored pixel in the printed image or a blank or clear pixel in the printed image) (col. 5, lines 13-20).

10. Regarding Claim 10, Walker et al discloses a print data generating method that generates a print data for completing a print process of a pixel by making a plurality of scans of a print head (pixel maps transferred to the printed page are typically arranged in a plurality of scan lines) (col. 4, lines 24-32), which prints dots on a print medium (Fig. 2), with respect to the print medium, comprising the steps of: assigning, to the pixel, specification information which specifies the number of one or more dots having a single size corresponding to a density level of the pixel (if the pixel map is a bit map having binary digits of "1" corresponding to solid-colored pixels and binary digits of "0" corresponding to blank pixels) (col. 6, lines 46-56) and one or more scans used to print the one or more dots having a single size (Figs. 2 and 4, both show all of the dots being the same size); and generating the print data corresponding to the one or more dots to be printed in each scan of the print head on the basis of the specification information assigned to the pixel (solid colored pixel in the printed image or a blank or clear pixel in the printed image) (col. 5, lines 13-20) wherein when the density level of the pixel is higher than a predetermined density level, the specification information specifying different scans used to print the dots is assigned to the pixel in the assigning step (Fig. 5, block 90) (total weight is greater or equal to the threshold value) (col. 7, lines 9-67).

11. Regarding Claim 12, Walker et al discloses an image recording apparatus for completing a print process of a pixel by making a plurality of scans of a print head (pixel

maps transferred to the printed page are typically arranged in a plurality of scan lines) (col. 4, lines 24-32), which prints dots on a print medium (Fig. 2), with respect to the print medium, comprising: a memory for storing a plurality of sets of specification information (operations of the controller are controlled according to a computer program resident within the RAM) (col. 4, lines 5-23), each of which specifies the number of one or more dots having a single size (Figs. 2 and 4, both show all of the dots being the same size) corresponding to a density level of the pixel and one or more scans (pixel maps transferred to the printed page are typically arranged in a plurality of scan lines) used to print the one or more dots having a single size (Fig. 2); assignment means for selecting one set of specification information corresponding to the density level of the pixel from the plurality of sets of specification information stored in said memory and assigning the selected specification information to the pixel (if the pixel map is a bit map having binary digits of “1” corresponding to solid-colored pixels and binary digits of “0” corresponding to blank pixels) (col. 6, lines 46-56); and printing control means for causing the print head to print the one or more dots on the pixel by the one or more scans specified by the assigned specification information (solid colored pixel in the printed image or a blank or clear pixel in the printed image) (col. 5, lines 13-20), wherein when the density level of the pixel is higher than a predetermined density level, the specification information specifying different scans used to print the dots is assigned to the pixel (Fig. 5, block 90) (total weight is greater or equal to the threshold value) (col. 7, lines 9-67).

12. Regarding Claim 13 Walker et al discloses a computer program product recorded on a computer- readable medium for making a computer generate data to be used in a printer for completing a print process of each pixel by making a plurality of scans of a print head (pixel maps transferred to the printed page are typically arranged in a plurality of scan lines) (col. 4, lines 24-32), which prints dots on a print medium, with respect to the print medium, comprising: a code for assigning a pattern, used to determine which of the plurality of scans is used to print one or more dots having a single size (Figs. 2 and 4, both show all of the dots being the same size) to be printed for each pixel, to that pixel (if the pixel map is a bit map having binary digits of "1" corresponding to solid-colored pixels and binary digits of "0" corresponding to blank pixels) (col. 6, lines 46-56); and a code for generating the data corresponding to the dots to be printed for respective scans of the print head on the basis of the assigned pattern (solid colored pixel in the printed image or a blank or clear pixel in the printed image) (col. 5, lines 13-20).

13. Regarding Claim 16, Walker et al discloses a computer program product recorded on a computer-readable medium for making a computer generate data to be used in a printer for completing a print process of each pixel by making a plurality of scans of a print head (pixel maps transferred to the printed page are typically arranged in a plurality of scan lines) (col. 4, lines 24-32), which prints dots on a print medium (Fig. 2), with respect to the print medium, comprising: a code for assigning, to each pixel, a pattern which specifies the number of one or more dots having a single size (Figs. 2 and 4, both show all of the dots being the same size) corresponding to a density level of the

pixel and scans used to print the one or more dots having a single size (if the pixel map is a bit map having binary digits of "1" corresponding to solid-colored pixels and binary digits of "0" corresponding to blank pixels) (col. 6, lines 46-56); and a code for generating the data corresponding to the dots to be printed for respective scans of the print head on the basis of the assigned pattern (solid colored pixel in the printed image or a blank or clear pixel in the printed image) (col. 5, lines 13-20).

Claim Rejections - 35 USC § 103

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 4-7, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Walker et al in view of Nou (US 6,932,452).

16. Regarding Claim 4, Walker et al fails to teach a method, wherein a plurality of sets of specification information are prepared in correspondence with each of the density levels of the pixel, and in the selecting step, one of the plurality of sets of specification information corresponding to the density level of the pixel is selected randomly, in a predetermined order, or according to a position of the pixel.

Nou teaches a method, wherein a plurality of sets of specification information are prepared in correspondence with each of the density levels of the pixel, and in the selecting step, one of the plurality of sets of specification information corresponding to the density level of the pixel is selected randomly, in a predetermined order, or

according to a position of the pixel (bit data is selected according to the tone level of the image data) (col. 6, lines 64-67, col. 7, lines 1-10).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the teachings of Walker wit the teaching of Nou to predetermine the position of the dots so that the dots can be controlled and a suitable tone representation is achieved.

17. Regarding Claim 5, Walker fails to teach a method, wherein the plurality of scans include both forward and backward scans of the print head, and the specification information corresponding to the density level of the pixel which requires to print two or more dots specifies the scans used to print the dots so that dots to be printed are distributed to both the forward and backward scans.

Nou teaches a method, wherein the plurality of scans include both forward and backward scans of the print head (Figs. 4 and 5), and the specification information corresponding to the density level of the pixel which requires to print two or more dots specifies the scans used to print the dots so that dots to be printed are distributed to both the forward and backward scans (drive voltage applied in the opposite direction, ink is emitted in a similar manner) (col. 4, lines 59-67, col. 5, lines 1-7).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the teachings of Walker with the teaching of Nou to incorporate both forward and backward scans to print the dots to that a uniform tone representation can be achieved in the final output.

18. Regarding Claim 6, Walker et al fails to teach a method, wherein the plurality of scans include both forward and backward scans of the print head, and the specification information specifies the scans used to print the dots so that dots to be printed are distributed to one of the forward and backward scans.

Nou teaches a method, wherein the plurality of scans include both forward and backward scans of the print head (Figs. 4 and 5), and the specification information specifies the scans used to print the dots so that dots to be printed are distributed to one of the forward and backward scans (drive voltage applied in the opposite direction, ink is emitted in a similar manner) (col. 4, lines 59-67, col. 5, lines 1-7).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the teachings of Walker with the teaching of Nou to incorporate both forward and backward scans to print the dots to that a uniform tone representation can be achieved in the final output.

19. Regarding Claim 7, Walker et al fails to teach a method, wherein a plurality of sets of specification information corresponding to the predetermined density level are assigned to pixels so that the number of the one or more dots printed in forward scan become equal to the number of one or more dots printed in backward scan.

Nou teaches a method, wherein a plurality of sets of specification information corresponding to the predetermined density level are assigned to pixels so that the number of the one or more dots printed in forward scan become equal to the number of one or more dots printed in backward scan (drive voltage applied in the opposite direction, ink is emitted in a similar manner) (col. 4, lines 59-67, col. 5, lines 1-7).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the teachings of Walker with the teaching of Nou to incorporate both forward and backward scans to print the dots to that a uniform tone representation can be achieved in the final output.

20. Regarding Claim 14, Walker et al fails to teach a program product, wherein the code for assigning includes selecting one of patterns corresponding to a density level of a pixel of interest and assigning the selected one pattern to the pixel of interest.

Nou teaches a program product, wherein the code for assigning includes selecting one of patterns corresponding to a density level of a pixel of interest and assigning the selected one pattern to the pixel of interest (bit data is selected according to the tone level of the image data) (col. 6, lines 64-67, col. 7, lines 1-10).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the teachings of Walker wit the teaching of Nou to predetermine the position of the dots so that the dots can be controlled and a suitable tone representation is achieved.

21. Regarding Claim 15, Walker et al fails to teach a program product, wherein a plurality of patterns are prepared in correspondence with each of the density levels of the pixel, and in the selecting, one of the plurality of patterns corresponding to a density level of a pixel of interest is selected randomly or in a predetermined order.

Nou teaches a program product, wherein a plurality of patterns are prepared in correspondence with each of the density levels of the pixel, and in the selecting, one of the plurality of patterns corresponding to a density level of a pixel of interest is selected

randomly or in a predetermined order (bit data is selected according to the tone level of the image data) (col. 6, lines 64-67, col. 7, lines 1-10).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the teachings of Walker wit the teaching of Nou to predetermine the position of the dots so that the dots can be controlled and a suitable tone representation is achieved.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SATWANT K. SINGH whose telephone number is (571)272-7468. The examiner can normally be reached on Monday thru Friday 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be reached on (571) 272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Satwant K. Singh
Examiner
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Sks

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